

## Respiratory Disease Fact Sheet

CIRM funds many projects seeking to better understand respiratory disease and to translate those discoveries into new therapies.

### Description

Severe blockage of the major airway, or trachea, is relatively rare but is severely debilitating and often causes death. Estimates suggest 200 new cases occur in California each year. The blockage most often occurs after injury, treatment for a tumor or following insertion of a breathing tube for other medical procedures. Physicians currently treat these blockages through surgery or by using a stent to hold the airway open. But neither approach produces very good or lasting results. Replacing the damaged trachea with a new one could be a potential cure. A few teams around the world are working with different types of natural and synthetic scaffolds to try to grow new tracheas for transplant using stem cells.

### Clinical Stage Programs

#### University of California, Davis




The team uses a trachea from a cadaver as a scaffold, removing the soft tissue cells and then seeding the remaining scaffold with two types of stem cells from the patient. That construct is grown in a bioreactor until it is ready for transplant in the patient. The team has already used the procedure through the European compassionate use exemption in five dying patients, saving three of their lives. They plan to use this award to do tests in non-human primates to better understand the role of each type of stem cell used to seed the scaffold.

### CIRM grants targeting respiratory disorders

Researcher name	Institution	Grant Title	Grant Type	Approved funds	
Alice Tarantal	University of California, Davis	Preclinical Model for Labeling, Transplant, and In Vivo Imaging of Differentiated Human Embryonic Stem Cells	Comprehensive Grant	\$2,166,757	
Andrew McMahon	University of Southern California	Repair and regeneration of the nephron	Research Leadership	\$5,672,206	
Jeffrey Lawson	Humacyte, Inc.	A Human Acellular Vessel in Patients Needing Renal Replacement Therapy: A Comparison with ePTFE Grafts as Conduits for Hemodialysis (HUMANITY)	Clinical Trial Stage Projects	\$9,999,528	
Samuel Strober	Stanford University	Induction of Tolerance to Combined Kidney and Hematopoietic Progenitor Cell Transplants from HLA Haplotype Matched Living Donors	Clinical Trial Stage Projects	\$6,653,266	
Jeffrey Lawson	Humacyte, Inc.	A Phase 3 Study Comparing the Utility of Human Acellular Vessels to Arteriovenous Fistula in Subjects with End-Stage Renal Disease (California Sites)	Clinical Trial Stage Projects	\$14,082,865	
Alice Tarantal	University of California, Davis	Enhanced Branching Morphogenesis and Pluripotent Cell Lineage Differentiation for Pediatric Regenerative Therapies	Inception - Discovery Stage Research Projects	\$235,800	

Steven Deitcher	Medeor Therapeutics, Inc.	Cellular Immunotherapy for Induction of Immune Tolerance in HLA Matched Living Donor Kidney Transplant Recipients	Clinical Trial Stage Projects	\$18,763,585	
					Total: \$57,574,007.00

## CIRM respiratory disorders videos

 <p>Matthew Donne, UCSF - CIRM Stem Cell #SciencePitch</p>	 <p>Youngtae Jeong, Stanford - CIRM Stem Cell #SciencePitch</p>	 <p>Asaf Presente, UCSD - CIRM Stem Cell #SciencePitch</p>
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